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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 05/28/2002

MORLAND C FISCHER
STE 1050
2030 MAIN STREET
IRVINE, CA 92614

EXAMINER

GARBER, CHARLES D

ART UNIT

CLASS-SUBCLASS

2856

073-040700

DATE MAILED: 05/28/2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/385,050	08/30/1999	KENNETH ALAN PIERONI	CHMP-103	8658

TITLE OF INVENTION: METHOD FOR DETECTING LEAKS IN A FLUID SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$640	\$0	\$640	08/28/2002

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above. If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

B. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status.
See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Box ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

7590 05/28/2002

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IRVINE, CA 92614**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	YES	\$640	\$0	\$640	08/28/2002
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EXAMINER	ART UNIT	CLASS-SUBCLASS
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GARBER, CHARLES D	2856	073-040700
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1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

4b. Payment of Fee(s):

☐ Issue Fee

☐ A check in the amount of the fee(s) is enclosed.

☐ Publication Fee

☐ Payment by credit card. Form PTO-2038 is attached.

☐ Advance Order - # of Copies _____

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Commissioner for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature)

(Date)

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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09/385,050	08/30/1999	KENNETH ALAN PIERONI	CHMP-103	8658
7590 05/28/2002			EXAMINER	
MORLAND C FISCHER STE 1050 2030 MAIN STREET IRVINE, CA 92614			GARBER, CHARLES D	
			ART UNIT	PAPER NUMBER
			2856	
DATE MAILED: 05/28/2002				

Determination of Patent Term Extension under 35 U.S.C. 154 (b)
(application filed after June 7, 1995 but prior to May 29, 2000)

The patent term extension is 0 days. Any patent to issue from the above identified application will include an indication of the 0 day extension on the front page.

If a continued prosecution application (CPA) was filed in the above-identified application, the filing date that determines patent term extension is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system. (<http://pair.uspto.gov>)

Notice of Allowability

Application No.

09/385,050

Examiner

Charles D. Garber

Applicant(s)

PIERONI ET AL.

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/22/2002.
2. ☒ The allowed claim(s) is/are 11-17.
3. ☒ The drawings filed on 30 August 1999 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____ | 6 <input type="checkbox"/> Examiner's Amendment/Comment |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

Allowable Subject Matter

Claims 11-17 are allowed.

The following is an examiner's statement of reasons for allowance:

Prior art does not disclose or suggest as in claim 11 a method for detecting leaks in a fluid system to be tested in a volatile potentially explosive environment, said method comprising the steps of: adding a fluorescent dye to a supply of oil to form a uniform mixture; locating a heating element in a sealed chamber; blowing at least some of said uniform mixture of oil and fluorescent dye towards said heating element within said sealed chamber by means of a non-combustible nitrogen gas delivered under pressure to said mixture; heating the blown mixture by said heating element so that said oil is vaporized into smoke within said sealed chamber to create a carrier for said fluorescent dye, said noncombustible nitrogen gas preventing dieseling within said sealed chamber and the possibility of an explosion at the volatile potentially explosive environment in which the fluid system will be tested; delivering said smoke and said fluorescent dye carried thereby to the fluid system under test, whereby said smoke will exit a leak in the fluid system and said fluorescent dye will leave a fluorescent trace around the leak; and shining ultraviolet light on the fluid system under test to illuminate the trace left by the fluorescent dye around the leak.

As discussed in Examiner's earlier office action the Pieroni et al. reference discloses an apparatus for detecting leaks in a fluid system (title) and a method of its operation (column 3 line 47+) including:

Providing a supply of fluid preferably oil 2 (column 2 lines 50-51) within a sealed chamber (column 1 lines 7-9). Pieroni also disclose fluid 2 within chamber 1 and element 4 (figure 5) which is equivalent to locating a heating element within the sealed chamber as in the instant invention.

The reference recites "... inlet air will be mixed with the fluid 2 so as to be blown outwardly from air inlet tube 16 and upwardly towards the heating grid 4. As drops of fluid contact the heating grid 4, they will be instantaneously vaporized into smoke 30" (column 4 lines 3-7), equivalent to heating at least some of the oil so that said oil is vaporized into smoke as in the instant invention.

The reference further recites "... the smoke 30 will be delivered to smoke supply conduit 20 by air outlet tube 14. As the smoke reaches the fluid system to be tested, any leak therein will allow some of the smoke to escape." (column 4 lines 12-15), equivalent to delivering said smoke carried thereby to the fluid system under test as in the instant invention;

The reference also recites "... a visible detection of escaping smoke will provide a quick and easy indication of the presence and location of the leak" (column 4 lines 15-16) equivalent to said smoke exiting a leak in the fluid system as in the instant invention.

However, the Pieroni et al. reference does not teach adding a fluorescent dye to the oil and using the smoke generated from the oil as a carrier for said fluorescent dye; wherein said fluorescent dye will leave a fluorescent trace around the leak; and shining ultraviolet light on the system under test to illuminate the trace left by the fluorescent dye around the leak.

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Nevertheless, Scott discloses a fog and/or smoke generating device for performing smoke tests revealing leaks in sewers, pipes or boilers and similar conduits or containers (column 1 lines 5-35). The invention of Scott includes a thermal-aerosol generator that creates smoke by injecting an atomized hydrocarbon liquid or oil mixture into a hot gas stream to cause vaporization by heating (column 3 lines 5-9). The resulting smoke is then mixed with ambient air to cool the smoke.

Scott recites " The hydrocarbon liquid may also include a residual or visible coloring material, such as a fluorescent material, or may contain other colored, coloring and/or residue and/or non-residual color producing materials to aid in locating the openings. Detection of fluorescent materials may include the use of ultraviolet or black light " (column 3 lines 40-46) teaching the mixture of oil and fluorescent dye as in the instant invention. Scott also recites "The hydrocabon [sic] liquid within container 55 may, if desired, include a coloring material which is atomized and vaporized with the hydrocarbon, mixed into the flow of ambient air and introduced into the region to aid in observing the fog and/or smoke emanating from the region opening 77. This coloring material my be a fluorescent residual material and/or may be a colored material which may or may not be deposited as a residue near the region openings and the term "fog" is intended to be generic to smokes, fogs, and the like whether colored, fluorescent, residue producing or not" (column 7 lines 14-25). The Examiner considered that it would have been obvious to one having ordinary skill in the art at the time the invention was made to mix a fluorescent dye with oil used for producing tracer smoke for leak

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detection as taught by Scott as it obviously adds another indicator that would improve the probability of detection in the presence of a leak.

The Pieroni et al. reference also lacks a teaching of the system under test being one in which a working gas or liquid is to be transported under pressure (as opposed to gravity for instance).

Gouge discloses a method of smoke testing a heat exchanger of a gas furnace for the presence or absence of leakage or fluid-tight integrity (abstract).

Gouge teaches that heat exchange systems fall into two categories: naturally drawn systems in which hot air rises through a cooler air mass to draw the products of combustion at the burner through the heat exchanger and induced flow systems where hot air is blown through the heat exchanger (column 2 lines 12-51). Gouge explains that one aspect of the invention allows for testing heat exchangers under condition similar to the operating condition in which a smoke is introduced into a sealed heat exchanger under a pressure similar to the operating pressure of the heat exchanger (column 4 lines 19-25). This is considered to be equivalent to the system under test being one in which a working gas or liquid is to be transported under pressure. The Examiner considered that it would have been obvious to one having ordinary skill in the art at the time the invention was made that a fluid system in which a working gas or liquid is to be transported under pressure may be tested using a smoke generator type leak tester. Testing of such systems may advantageously identify leaks which would allow harmful combustion products to enter a living space. (column 1 lines 51-63).

However, in the most recent amendment to the claims, Applicants have added the limitation stating the "noncombustible nitrogen gas" is included for "preventing dieseling within said sealed chamber and the possibility of an explosion at the volatile potentially explosive environment in which the fluid system will be tested".

Though "dieseling" is usually considered to be the explosion of a mixture of air and lubricating or fuel oil in a compression chamber or other part of an engine due to the heat of compression resulting in after-running or continued running of the engine after the normal ignition source is shut off, in the context of the instant invention it is understood to indicate combustion of a mixture of air and oil due to the heat of over-compression.

The prior art relevant to leak detection and smoke generation fails to teach the use of nitrogen propellant or carrier gas in order to prevent pressure induced ignition or "dieseling".

Claims 12-17 depending from allowed claim 11 are allowed for the same reason.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (703) 308-6062. The examiner can normally be reached on 6:30 am - 4:pm M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7725 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

cdg
May 15, 2002


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800